

CHAPTER I

INTRODUCTION

Recently, number of discarded Cathode Ray Tube televisions (CRT-TVs) in Thailand has increased sharply and it is anticipated that a lot more would be disposed. This is due to the facts that the digital broadcast system of the country has been introduced and the new versions of televisions are on the market such as LCD and LED TVs. According to Pollution Control Department (PCD), 2011 as many as 2.5 million sets of CRT-TV are discarded every year and there have not been proper treatment facilities in Thailand to handle these TV wastes. Therefore, there are increasing concerns about a large amount of solid waste generated from TV products and the impacts of improper management of TV wastes to the environment, human and eco-system, especially heavy metals and other toxin substance.

In order to analyze these impacts thoroughly, all pathways in the End-of-Life (EoL) of CRT-TV must be considered, including energy and materials input as well as all emissions released out of the system. One effective tool for environmental assessment is life cycle analysis or LCA. This tool can be used to identify the environmental burdens and analyze the flow of materials added in and released out of the system. It is suitable method for directly identifying of major environmental problems or “hot spots”. Thus, this study aims to use LCA technique to evaluate the environmental impacts associated with end-of-life management of CRT-TV in Thailand. The scope of the research covers inventory data collection (raw materials, chemicals, energy, utilities and emissions) for all processes involved in the waste management of discarded CRT-TV. Both primary data (interview) and secondary data from literatures and research reports based on current situation were used for life cycle analysis (LCA) based on ISO 14040 series framework. The data were analyzed by using commercial LCA software, SimaPro 7.1, with Eco-Indicator 95 and CML 2 baseline 2000 methods to identify the environmental burdens in terms of global warming impact (GWP), acidification potential (AP), acidification, and human toxicity. In addition to current situation (base case), several scenarios (improved and modified from

the base case) were created, analyzed and compared with the base case. Finally, suggestions for improvements of the management of TV wastes in Thailand could be offered in order to reduce impact on human health and the environment.